

## **REMARKS**

### **Summary of the Office Action**

The drawings stand objected to because Fig. 1 should allegedly be designated by a legend such as "Prior Art."

Claim 4 is objected to for an alleged informality.

Claims 5, 8 and 11 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite.

Claims 1, 6-7, 9-10 and 12-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's allegedly admitted prior art of Fig. 1 in view of U.S. Patent No. 6,157,043 to Miyamoto.

Claims 2-5, 8 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's allegedly admitted prior art of Fig. 1 in view of Miyamoto as applied to claims 1, 7 and 10 above, and further in view of U.S. Patent No. 6,183,714 to Smalley et al. (hereinafter "Smalley").

### **Summary of the Response to the Office Action**

A Request for Approval of Drawing Change is submitted herewith. Applicants have amended claims 1, and 4-12 to differently describe the invention and to improve the form of the claims. Claims 2, 3, 13 and 14 have been canceled without prejudice or disclaimer.

Accordingly, claims 1 and 4-12 and 15-16 remain pending.

**Objection to the Drawings**

The drawings stand objected to because Fig. 1 should allegedly be designated by a legend such as "Prior Art." In a Request for Approval of Drawing Change filed concurrently herewith, Applicant proposes to amend Fig. 1 by labeling it as "Background Art." Accordingly, Applicants respectfully request that the objection to the drawings be withdrawn.

**Objection to Claim 4**

Claim 4 is objected to for an alleged informality. This claim has been amended in accordance with the Examiner's helpful suggestion at page 2, paragraph 3 of the Office Action. Accordingly, Applicants respectfully request that the objection to claim 4 be withdrawn. Moreover, similar amendments have been made to claims 6, 9 and 12, even though these claims were not objected to, in order to render the form of the claims consistent with each other.

**Rejections under 35 U.S.C. § 112, Second Paragraph**

Claims 5, 8 and 11 stand rejected under 35 U.S.C. § 112, second paragraph as allegedly being indefinite. Applicants have amended claims 5, 8 and 11 in accordance with the Examiner's comments. Each of these claims have been amended to recite that the carbon nanotube(s) and/or carbon nanofiber(s) is "formed by one of a thermal decomposition method, a catalyst thermal decomposition method, a plasma vapor deposition method, and a hot-filament vapor deposition method." Applicants respectfully submit that the specification as originally filed utilizes the terms "synthesize" and "manufacture" to have the same meaning. Accordingly, Applicants respectfully submit that it was originally clear that these claims recite that the carbon nanotube(s) and/or carbon nanofiber(s) are formed by one of the recited methods. Nevertheless,

claims 5, 8 and 11 are amended in accordance with the Examiner's comments. Accordingly, Applicants respectfully submit that claims 5, 8 and 11, as amended, fully comply with the requirements of 35 U.S.C. § 112, second paragraph. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. § 112, second paragraph be withdrawn.

**The Rejections under 35 U.S.C. § 103(a)**

Claims 1, 6-7, 9-10 and 12-16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's allegedly admitted prior art of Fig. 1 in view of Miyamoto. Claims 2-5, 8 and 11 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over applicant's allegedly admitted prior art of Fig. 1 in view of Miyamoto as applied to claims 1, 7 and 10 above, and further in view of Smalley. These rejections are respectfully traversed as follows.

Applicants respectfully note that the background art of Fig. 1 merely illustrates a small sized inductor that is made of conductive metal. The subject matter of the instant invention, on the other hand, as disclosed in the specification, can be formed to various shapes having enhanced electrical characteristics, including coil-shapes, which are different from that of the Fig. 1 arrangement and which could not have been accomplished using merely the disclosure associated with Fig. 1. Applicants respectfully submit that the instant invention, as specifically recited by the claimed combinations, is directed to an aggregation of nanotube(s) or nanofiber(s), which can be formed to a wide variety of advantageous shapes, as disclosed in the specification.

Applicants respectfully submit that Miyamoto, unlike the disclosure of Fig. 1, is directed to a solenoid arrangement in which carbon nanotube(s) or carbon nanofiber(s) are to be placed on a silicon substrate. Applicants further respectfully submit that the object of Miyamoto is not only to diminish the size of the solenoid arrangement, but also to apply a tensile force to the

nanotube or nanofiber by pulling edges of the nanotube or nanofiber in opposite directions.

Accordingly, Applicants conclude that Miyamoto relates to a manufacturing method in which the disclosure concentrates on specific mechanical processes in this regard.

Accordingly, Applicants respectfully submit that the applied references, namely the arrangement of Fig. 1 of the instant application and the Miyamoto reference relate to different subject matter from each other. As a result, Applicants respectfully submit that there is no motivation taught or suggested by the cited references to modify the teachings of the arrangement of Fig. 1 of the instant application and Miyamoto to obtain the claimed combinations. Applicants submit that only through hindsight would one be motivated to modify the arrangement of Fig. 1 to meet the limitations of the claims. MPEP § 2141, under the heading "Basic Considerations Which Apply to Obviousness Rejections," points out that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." [See also Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 229 USPQ 182 (Fed. Cir. 1986).] The Federal Circuit has clearly held that "the motivation to combine references cannot come from the invention itself." Heidelberger Druckmaschinen AG v. Hantscho Commercial Products, Inc., 21 F.3d 1068, 30 USPQ 2d 1377 (Fed. Cir. 1993).

Absent any teaching or suggestion *in the prior art* to adapt the teachings of Fig. 1 of the instant application to meet the claimed invention, the rejection under 35 U.S.C. § 103(a) is improper. Accordingly, Applicants respectfully submit that the rejections under 35 U.S.C. § 103(a) should be withdrawn.

Nevertheless, in the interest of expediting prosecution, Applicants have amended independent claim 1 to include the limitations of original claims 2 and 3. Accordingly, claims 2 and 3 have been canceled without prejudice or disclaimer. Moreover, independent claim 7 has

been amended to include limitations similar to those of original claim 2. Moreover, independent claim 10 has been amended to include the limitations of original claims 13 and 14. Accordingly, claims 13 and 14 have been canceled without prejudice or disclaimer.

Applicants respectfully submit that Smalley fails to cure the deficiencies discussed above with regard to the combination of the arrangement shown in Fig. 1 and Miyamoto. Moreover, at page 4 of the Office Action, the Examiner alleged that “the use of ferrite powder/layer [would] have been an obvious design consideration for the purpose of enhancing the magnetic flux of the device.” Applicants respectfully traverse this assertion without the application of any specific prior art reference teaching this feature, as applied to the combinations specifically recited in the claims.

Accordingly, Applicants respectfully submit that independent claims 1, 7 and 10 are in condition for allowance for at least the foregoing reasons. Moreover, dependent claims 4-6, 8-9, 11-12 and 15-16 are allowable at least because of their dependence from one of claims 1, 7 and 10, and the reasons set forth above.

Attached hereto is a marked-up version of the changes made by the current amendment. The attachment is captioned “Versions with Markings to Show Changes Made.”

### CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicants’ undersigned representative to expedite prosecution.

**EXCEPT** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE CLAIMS:**

Claims 1 and 4-12 have been amended as follows:

1. (Amended) An inductor comprising a carbon nanotube and/or carbon nanofiber synthesized in a shape of a coil, **wherein the carbon nanotube and/or carbon nanofiber is synthesized between catalysts fixed at desired locations on a substrate, and wherein the catalysts are transition metals or alloys of transition metal.**

4. (Amended) An inductor as claimed in claim [3] **1**, wherein the transition metal is one selected from the group consisting of [~~iron Fe, nickel Ni, and cobalt Co~~] **iron (Fe), nickel (Ni), and cobalt (Co).**

5. (Amended) An inductor as claimed in claim 1, wherein the carbon nanotube and/or carbon nanofiber is [~~synthesized~~] **formed** by one of a thermal decomposition method, a catalyst thermal decomposition method, a plasma vapor deposition method, and a hot-filament vapor deposition method.

6. (Amended) An inductor as claimed in claim 1, wherein the carbon nanotube and/or carbon nanofiber is doped with elements such as [~~phosphorus P, boron B, silicon Si, and nitrogen N~~] **phosphorus (P), boron (B), silicon (Si), and nitrogen (N).**

7. (Amended) An inductor comprising an aggregate of carbon nanotubes and/or carbon nanofibers, in which the carbon nanotubes and/or carbon nanofibers respectively synthesized in a shape of coils are compressed, **wherein the carbon nanotube and/or carbon nanofiber is synthesized between catalysts fixed at desired locations on a substrate.**

8. (Amended) An inductor as claimed in claim 7, wherein the carbon nanotubes and/or carbon nanofibers are [~~synthesized~~] **formed** by one of a thermal decomposition method, a catalyst thermal decomposition method, a plasma vapor deposition method, and a hot-filament vapor deposition method.

9. (Amended) An inductor as claimed in claim 7, wherein the carbon nanotubes and/or carbon nanofibers are doped with elements such as [~~phosphorus P, boron B, silicon Si, and nitrogen N~~] **phosphorus (P), boron (B), silicon (Si), and nitrogen (N).**

10. (Amended) An inductor comprising a complex of carbon nanotubes and/or carbon nanofibers and a matrix such as an insulator, a ceramic, and a semiconductor, the carbon nanotubes and/or carbon nanofibers being synthesized respectively in a shape of a coil, **wherein the matrix is ferrite, and wherein the complex contains magnetic powder such as ferrite powder added in the complex.**



11. (Amended) An inductor as claimed in claim 10, wherein the carbon nanotubes and/or carbon nanofibers are [synthesized] **formed** by one of a thermal decomposition method, a catalyst thermal decomposition method, a plasma vapor deposition method, and a hot-filament vapor deposition method.

12. (Amended) An inductor as claimed in claim 10, wherein the carbon nanotubes and/or carbon nanofibers are doped with elements such as [~~phosphorus P, boron B, silicon Si, and nitrogen N~~] **phosphorus (P), boron (B), silicon (Si), and nitrogen (N)**.

Claims 2, 3, 13 and 14 have been canceled without prejudice or disclaimer.